spectrograph attached to the 36″ refractor, show that the bright silicon lines are considerably displaced from their usual position, i. e., their position as determined in the electric spark in the laboratory, and from ordinary stars in which silicon is present. Assuming these ordinary positions, the different elements (bright lines) yield the following radial velocities in P *Cygni*: hydrogen -8.0^{km} per second; helium -7.5; nitrogen -8.3; silicon $+9.5$.

The silicon lines differ appreciably in appearance from those of hydrogen, helium, and nitrogen. The absorption is relatively broader; the bright portion narrower and weaker, apparently being crowded toward the red end of the spectrum.

It is scarcely possible that silicon is (and has been for years) separating itself from the other elements in this star at the rate of 17^{km} per second. It is well known that pressure and certain electrical conditions affect the appearance and position of spectral lines. Some such cause is probably operative here.

This series of plates, from 1907 to 1911, confirms the result that has been remarked before, that no general change is taking place in this spectrum.

PAUL W. MERRILL.

BERKELEY, September, 1911.

NEW POSITIONS OF STARS IN THE HUYGHENIAN REGION OF THE NEBULA IN ORION.

This work is an extension of the work of G. P. BOND and others on the faint stars in the region of the *Orion* nebula within 300″ of the Trapezium. It was taken up with a view to obtaining accurate positions and studying proper motions independent of that of the Trapezium.

The observations were made with the 26½-inch refractor of the Leander McCormick Observatory. They cover a period of eighteen months beginning with September, 1908. All the observations were made in position angle and distance. With a view to decreasing the errors arising from the measurement of large distances, 628 (*θ Orionis*), 558, 669 and 685, the latter three stars forming a triangle about *θ*, were adopted as fundamental stars. The position angles and distances of all six combinations of these stars were measured on approximately forty nights. From the mean of these observations differences

in Right Ascension and Declination were computed and from these the final differential positions with respect to θ were determined by a least square solution. The positions of all stars within 100″ of the Trapezium were measured with reference to θ directly, those outside of that limit being measured with reference to the nearest fundamental star and thence referred to θ. As far as practicable ten measures were made on each star. The resulting positions were catalogued in order of Right Ascension.

The observations were compared with the results of former observers reduced to the epoch 1910.0. The great majority of the stars show no evidence of proper motion. Six of them show differences which cannot be explained by the errors of observation, but there is need for more accurate positions before the amount of motion can be determined.

Incidentally: five new stars were discovered, two of them being variable; measures were obtained on the Alvan Clark star within the Trapezium and the faint companion to Bond 642, given by Professor O. STONE in his work on the *Orion* Nebula; Herschel 51 was identified as Bond 567 instead of Bond 575; the existence of Bond 625 was shown to be doubtful; and a large variation in Bond 654 was noted.

RALPH E. WILSON.

NEW DOUBLE STARS.

The survey of the northern sky to catalogue all double stars under 5″ separation among stars to the 9.0 magnitude has proceeded more slowly this year than in former ones because the summer sky has been completely examined. Unexplored areas are now coming into position for observation in the late hours of the night and if conditions prove favorable the work should be practically completed before next summer.

Another list of one hundred new pairs, bringing the total of my discoveries to 2400, is being prepared for publication in the Lick Observatory Bulletins. The list is similar in all respects to those previously published. The following stars may be noted as of special interest: